File
(Picked up at Rochester by [illegible])

July 15, 1963

TO: [redacted]

FROM: 25X1A

SUBJECT: Variable Magnification Tracing Projector - estimation tasks to complete

1. Instability of the basic enlarger portion of the instrument causes the imagery to move about on the tracing surface as various motions and vibrations are transmitted through the instrument.

This will be corrected by the combination of two actions. Special castors that lock in rotation as well as transverse movement (e.g. Jarvis & Jarvis) will replace the inadequate castors presently used. There will be a mechanical correction added to combat the numerous torsion and bending factors of the enlarger framework. For example, a stiffener plate will be added between the two aluminum uprights and the entire unit will additionally bridged into the bottom angular framework.

2. Insufficient illumination at the viewing area. Measurements were made of the illumination with an open gate condition, PAR 138 (150 watts) lamp in focus position, and with the long conjugate set at 70 inches (mirrors at lowest position). Readings were variable but ranged essentially from 1½ to 4½ foot candles for the 12" and 4" lenses, and 2½ to 9 foot candles for the 7" lens -- lamp operating at 120 volts. There was little variance from axis to edge readings.

A similar condenser problem is presently in design for another contract, the Sloping Screen Viewer. For this, an illumination system of the highest efficiency was required for four fixed magnifications; 5, 10, 15 and 25X. A design was calculated with the results estimated to be 46 foot lamberts, minimum condition (46 foot candles using a 1:1 gain screen). The ensuing mockup of the system resulted in minimum readings of 50 foot lamberts.

Using a similar analysis of the Variable Magnification Tracing Projector illumination problem, a tentative value of approximately 15 - 16 foot candles was arrived as being theoretically possible for the minimum conditon, if a new condenser unit and 500 watt horizontal burning lamp were considered. This would

entail a complete redesign of the major portion of the existing enlarger. It would also require a forced air cooling system.

3. Additionally, the magnification setting indicators remain to be added when the calibration and alignment have been completed.

4. The stray light has been corrected, and a pair of nylon film rollers have been added for protection of the film at the film gate. The film stage will be further covered with a nylon or teflon material for further protection.

5. It is strongly recommended that the above modifications be made in order to provide a satisfactory instrument. Anything less than these would result in substandard performance.

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